

TABLE 19

COMPOSITION, wt. %									
Monomer					Glycerol		HYDRATION %		
PFBM	HEMA	NVP	SPM	wt. %	wt. %	WET ^a	DRY ^a	Dk ^a	REMARKS
4	74	10	12	85	15	75	—	49	All buttons were clear,
4	73	10	13	85	15	80	—	54	as were discs after
4	72	10	14	85 ^b	15	77	—	53	after hydration.
4	66	10	20	80 ^b	20	83	512	69	
4	71	10	15	85 ^b	15	81	422	59	

a. Obtained at 207 mos. and converted to 310 mos.

b. uv photopolymerization

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Example 20

Table 20 illustrates the polymerization of PFBM, HEMA, NVP, and SEM.TEA. All reactions were photoinitiated using benzoin methyl ether as the photoinitiator, either in the presence or absence of glycerol.

procedures. When contact lenses are to be made from the materials of this invention, buttons previously bulk polymerized can be ground to have optical front and rear surfaces by conventional, grinding and lathing operations known to the contact lens art. The useful materials of this invention, when formed into contact lenses, have high strength, i.e.,

TABLE 20

COMPOSITION, wt. %									
Monomer					Glycerol		HYDRATION %		
PFBM	HEMA	NVP	SEM	TEA	wt. %	wt. %	WET ^a	DRY ^a	Dk ^a REMARKS
4	73.4	10	6	4.6	85	15	65	179	35 All buttons were clear as were
4	63.5	10	12.7	9.8	100	—	81	—	54 discs after hydration.

Example 21

This example illustrates the effect of protein absorption. An artificial tear solution was prepared:

Albumin	0.788 g
Lysozyme	0.430 g
-Globulin	0.270 g
Mucin	0.400 g
Calcium Chloride	0.008 g

in 200 ml of an isotonic buffer.

The hydrogel discs including fluorinated and non-fluorinated lens materials were soaked in the artificial tear solution at 35° C. for two weeks. With fluorinated lens materials containing from 0.2 to 25 wt. % fluoromonomer in accordance with this invention, substantially less surface deposits were noted as compared to the non-fluorinated hydrogel lens materials, with the higher content fluoro material appearing to have less deposit formation. In addition, all fluoropolymer materials were readily cleaned by running water, a circumstance which was not possible with the non-fluorinated polymers. With the use of an enzyme cleaner, the surface deposits were also removed.

While specific embodiments of the invention have been shown and described, many modifications and variations are possible. For example, while bulk polymerization of materials in rod or button form has been described it is possible to use conventional contact lens molding techniques such as cast molding and spin cast molding to directly form finished or near finished contact lenses. Thus, the need for optically grinding lens surface and rear portions can be avoided by using such casting techniques. When spin casting by conventional techniques, polymerization can be carried out in a solvent such as glycerol often used in amounts of from 5 to 30 wt. % and preferably 15 wt. % with standard spin casting

tear strength is at least as high as commonly existing commercial hydrogel contact lenses. In fact tear strength, tensile strength and modulus of elasticity are at least equivalent to generally acceptable commercial hydrogel contact lenses.

I claim:

1. A clear hydrogel lens polymeric material having good surface resistance, high tensile and tear strength, high oxygen permeability, good optical clarity and consisting essentially of the free radical polymerization product of (a) about 7 to about 25.0 parts by weight of a fluorine-containing monomer, (b) about 2.5 to about 81.0 parts by weight of a material selected from the group consisting of mono- or di-hydroxyalkyl or alkylene oxide acrylates or methacrylates, (c) about 10 to about 50.0 parts by weight of an N-vinyl lactam, and (d) about 5 to about 35.4 percent by weight of added unsaturated sulfonic acid monomers or salts thereof,

said product having a Dk value of from at least 35 at 35°

C. and a wet water of hydration of at least 30 percent.

2. A hydrogel lens material in accordance with claim 1 and further comprising (e) about 0 to about 7 percent by weight of a crosslinking agent, and (f) 0-2 percent by weight of a ultraviolet absorbing monomer or polymer,

said material having a Dk value of at least 35 at 35° C.

3. A polymeric material according to claim 2 wherein component (a) is a fluorine containing acrylate or methacrylate having the following formula: